

Claims:

21. (CURRENTLY AMENDED) A process for converting bulk nickel metal to nickel sulfate comprising the steps of:

1) providing the bulk nickel metal to a system having at least one enclosed reactor;

2) supplying sulfuric acid solution to the system;

3) ~~supplying~~ introducing oxygen into the system ~~sulfuric acid solution~~; said oxygen ~~mixing with said sulfuric acid to form an oxygen-containing sulfuric acid solution~~; and

4) ~~reacting~~ contacting said oxygen-containing and said sulfuric acid solution with the bulk nickel metal in the at least one enclosed reactor to produce nickel sulfate solution, wherein the ~~oxygen-containing sulfuric acid solution is controlled-maintained~~ within a pH range; of about 0.1 to 6.0 ~~wherein the difference between the maximum pH and the minimum pH of the pH range is 5.9 or less.~~

22-45. (CANCELLED)

46 (CANCELLED)

47 (CURRENTLY AMENDED) The process of claim 21, wherein the pH range is 2.5 to 4.0 ~~difference between the maximum pH and the minimum pH of the pH range is 2.5 or less.~~

48 (CANCELLED)

49. (PREVIOUSLY PRESENTED) The process of claim 21, wherein the pH range is 0.1 to 6.0.

50. (CANCELLED)

51. (CURRENTLY AMENDED) The process of claim 21, wherein pH range is of the oxygen-containing sulfuric acid solution is controlled to a pH of less than 0.1 to 4.0.

52. (CURRENTLY AMENDED) The process of claim 21, wherein at least 1.8 kg of bulk nickel is converted to nickel sulfate greater than 1% of the bulk nickel is reacted per hour.

53. (CURRENTLY AMENDED) The process of claim 21, wherein the oxygen-containing sulfuric acid solution reacts with bulk nickel metal at a temperature of the at least one enclosed reactor is maintained at of 20 to 95 degrees Celsius or less.

54. (CURRENTLY AMENDED) The process of claim 53, wherein at least 1.8 kg of bulk nickel is converted to nickel sulfate greater than 1% of the bulk nickel is reacted per hour.

55. (CURRENTLY AMENDED) The process of claim 21, wherein oxygen gas is supplied to the system at a first pressure and sulfuric acid is supplied to the system at a second pressure.

56. (CURRENTLY AMENDED) The process of claim ~~21~~55, wherein the first pressure differs from the second pressure by an amount between 1 psi and ~~140~~ psi.

57. (CURRENTLY AMENDED) The process of claim ~~21~~55, wherein the first pressure is in a range of about 10 psi to about 149 psi and the second pressure is in a range of about 11 psi to about 150 psi.

58. (CURRENTLY AMENDED) The process of claim 21, wherein the bulk nickel metal has an average size greater than 0.1 mm.

59. (CURRENTLY AMENDED) The process of claim 21, wherein the bulk nickel metal has an average size of greater 0.254 cm in diameter.

60. (CURRENTLY AMENDED) The process of claim 21, wherein the bulk nickel metal has an average size of ~~0.245~~0.254 cm to 3.81 cm in diameter.

61. (PREVIOUSLY PRESENTED) The process of claim 21, wherein the surface area of the bulk nickel is .20 square centimeters or greater.

62. (PREVIOUSLY PRESENTED) The process of claim 21, wherein the bulk nickel metal comprises 99.99% nickel.

63. (CURRENTLY AMENDED) The process of claim 21, wherein said nickel sulfate solution has a nickel metal concentration of about 10 weight percent~~contains a concentration of nickel of about 10 weight percent.~~

64. (PREVIOUSLY PRESENTED) The process of claim 21, wherein said step of supplying oxygen to the system comprises supplying air to the system.

65. (CURRENTLY AMENDED) A process for converting bulk nickel metal to nickel sulfate comprising the steps of:

- 1) providing the bulk nickel metal to a system having at least one enclosed reactor;
- 2) supplying sulfuric acid solution to the system;
- 3) ~~supplying~~ introducing oxygen into the system ~~sulfuric acid solution~~ ~~said oxygen mixing with said sulfuric acid to form an oxygen-containing sulfuric acid solution;~~ and
4. ~~reacting~~ contacting said oxygen-containing and said sulfuric acid solution with the bulk nickel metal in the at least one enclosed reactor wherein the at least one enclosed reactor is maintained at a temperature of 20 degrees Celsius to 95 degrees Celsius ~~to produce nickel sulfate solution, wherein the temperature during the reaction is less than 95 degrees Celsius.~~

66. (CURRENTLY AMENDED) The process of claim 4165, wherein at least 1.8 kg of bulk nickel is converted to nickel sulfate wherein greater than 1% of the bulk nickel is reacted per hour.

67. (CURRENTLY AMENDED) The process of claim 4165, wherein the bulk nickel metal has an average size greater than 0.1 mm in diameter.

68 (CURRENTLY AMENDED) The process of claim 4165, wherein the bulk nickel metal has an average size of greater 0.254 cm in diameter.

69. (CURRENTLY AMENDED) A continuous process for converting bulk nickel metal to nickel sulfate comprising the steps of:

1.) providing bulk nickel metal to a system having at least one enclosed reactor;

2) supplying sulfuric acid solution to the system;

3) ~~supplying-introducing oxygen into the system~~sulfuric acid solution, said
~~oxygen mixing with said sulfuric acid to form an oxygen-containing sulfuric acid~~
~~solution; and~~

4.) ~~reacting-contacting the oxygen-containing and the~~ sulfuric acid solution
with the bulk nickel metal in the at least one enclosed reactor, wherein the sulfuric acid
solution is maintained within a pH range of about 0.1 to 4.0 and the at least one enclosed
reactor is maintained at a temperature of 20 degrees Celsius to 100 degrees Celsius -at a
controlled pH, wherein the temperature is less than 95 degrees Celsius and wherein the
oxygen-containing sulfuric acid is a controlled within a pH range the difference between
the maximum pH and the minimum pH of the controlled pH range being 2.5 or less.